

CARGO LIFT FOR A VEHICLE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a cargo lift, and more particularly to a cargo lift for a vehicle.

2. Description of Related Art

With reference to Figs. 7 and 8, a conventional cargo lift (40) for a vehicle (60) has a motor (41), an upper stanchion (42), a lower stanchion (43), a platform (44), two platform brackets (45), a roller bracket (not numbered), a mounting bracket (47), a wing (48) and a platform storage device (not numbered).

The upper stanchion (42) is hollow and has a proximal end (not numbered), a distal end (not numbered), two front edges (not numbered), a front wall (not numbered) and two sidewalls (not numbered). One of the sidewalls has an actuating arm stop (not numbered). The actuating arm stops are formed respectively near the front edges.

The lower stanchion (43) is transverse T-shaped and has a proximal end (not numbered), a distal end (not numbered), two front edges (not numbered), a front wall (not numbered), two sidewalls (not numbered), a large roller (451), a transverse portion (not numbered) and two pivot arms (not numbered). The proximal end of the lower stanchion (43) is slidably mounted inside the distal end of the upper stanchion (42). The motor (41) is attached to the proximal end of the upper stanchion (42) and has a telescoping piston (not numbered). The large roller (451) is attached to the front wall of the distal end

1 of the lower stanchion (43) and faces to the vehicle (60). The transverse portion
2 is securely mounted on the distal end of the lower stanchion (43) with two free
3 ends. Each pivot arm is respectively mounted on one of the free ends of the
4 transverse portion.

5 The telescoping piston has a proximal end (not numbered) and a distal
6 end (not number) and is moveably mounted in the upper stanchion (42). The
7 proximal end of the telescoping piston is connected to the motor (41) and the
8 distal end is connected to the lower stanchion (43). The motor (41) selectively
9 extends or retracts the telescoping piston that extends or retracts the lower
10 stanchion (43) in the upper stanchion (42).

11 Each platform bracket (45) is respectively mounted on the platform (44)
12 and has an outer sidewall (not numbered). The pivot arms of the lower
13 stanchion are attached to the outer sidewalls of the platform bracket (45), are
14 bent away from the vehicle (60) and toward the platform and respectively have
15 free ends (not numbered).

16 The roller bracket (not numbered) is securely mounted on the platform
17 (44) and has an upper transverse arm (not numbered) and a small roller (452).
18 The roller bracket has an upper end (not numbered). The upper transverse arm
19 has a rear end (not numbered) and a front end (not numbered), and the rear
20 ends are securely attached respectively to the upper end of the roller bracket.
21 The small roller (452) is rotatably attached to the front ends of the upper
22 transverse arm.

23 The wing (48) is mounted on one of the front edges of the front wall at
24 the distal end of the upper stanchion (42) and extends toward the vehicle (60).

1 The mounting bracket (47) is pivotally connected to the wing (48) and
2 has a longitudinal arm (not numbered), a transverse arm (not numbered) and an
3 inclined corner (471). The transverse arm is attached to the vehicle (60), and
4 the longitudinal arm is attached to the wing (48).

5 The platform storage device selectively raises the platform (44) to a
6 stored position parallel to the upper stanchion (42) and has an actuating arm
7 (49) and a spring (50). The actuating arm (49) is T-shaped, has a transverse arm
8 (not numbered) and a longitudinal leg (not numbered) and is pivotally mounted
9 on the wing (48). The transverse arm has a top edge (not numbered), a front
10 end (not numbered) and a rear end (not numbered) and is integrally formed
11 with a longitudinal leg. The spring (50) is connected between the front ends of
12 the transverse arms and the wing (48). With the spring (50) attached to the front
13 end of the transverse arm of the actuating arm (49), the top edge at the rear end
14 of the transverse arm of the actuating arm (49) abut the actuating arm stop on
15 the upper stanchion (42). The longitudinal leg has a distal end (not numbered)
16 with enlarged feet (not numbered).

17 When the lower stanchion (43) is retracted into the upper stanchion
18 (42), the large roller (451) first abuts and rolls on the inclined corner (471) of
19 the mounting bracket (47). As the lower stanchion (43) continues to be
20 retracted into the upper stanchion (42), the large roller (451) rolls along the
21 longitudinal arm of the mounting bracket (47), and the small roller (452) abuts
22 the large feet on the distal end of the longitudinal leg of the actuating arm (49).

23 When articles (not shown) with an additional weight are loaded on the
24 platform (44), the weight of the articles on the platform (44) hold the platform

1 (44) in an extended position. The small roller (452) overcomes the spring (50),
2 pivot the actuating arm (49) and moves up along the front side of the
3 longitudinal leg of the actuating arm (49).

4 When no articles are on the platform (44), the platform (44) cannot
5 overcome the spring (50), small roller (452) is pressed down by the feet on the
6 longitudinal leg of the actuating arm (49) as the lower stanchion (43) is
7 retracted into the upper stanchion (42). As the small roller (452) is pressed
8 down, the platform bracket (45) raise toward the upper stanchion (42), and the
9 platform (44) moves to a stored position parallel to the upper stanchion (42).

10 The conventional cargo lift (40) for a vehicle (60) has the following
11 disadvantages:

12 1. The spring (50) is directly connected to the wing (48). When
13 assembling the cargo lift (40), the spring (50) easily slips off and injures
14 assembly personnel.

15 2. The spring (50) directly attached to the wing (48) is unsightly and
16 exposed and can pinch a person working around the cargo lift (40).

17 To overcome the shortcomings, the present invention provides a cargo
18 lift for a vehicle to mitigate or obviate the aforementioned problem.

19 SUMMARY OF THE INVENTION

20 The primary objective of the present invention is to provide a cargo lift
21 for a vehicle.

22 The cargo lift in accordance with the present invention has a motor, an
23 upper stanchion, a lower stanchion, a mounting bracket, a wing, a platform
24 storage device, two platform brackets, a roller bracket and a platform. The

1 motor is connected to the upper stanchion, and the lower stanchion is slidably
2 mounted inside the upper stanchion. The wing is formed on the upper stanchion,
3 and the mounting bracket is pivotally mounted on the wing. The platform
4 brackets are pivotally attached to the lower stanchion, and the platform is
5 mounted on the platform brackets. The platform storage device is mounted on
6 the wing has an actuating arm, a retaining spring and a spring-loaded holder.
7 The spring-loaded holder has a cylinder, a compressed spring, a second piston
8 and a piston nut. The cylinder is hollow and has an open end and a partially
9 closed end. The second piston has a proximal end, a distal end, a head and a
10 shaft and is slidably mounted inside the cylinder. The head protrudes from the
11 open end of the cylinder, and the shaft protrudes from the partially closed end
12 of the cylinder. The compressed spring is mounted around the shaft between
13 the head and the partially closed end of the cylinder, and the second piston nut
14 is screwed on the shaft outside the cylinder to hold the piston in the cylinder.

15 When the cargo lift is assembled, the compressed spring is mounted
16 inside the cylinder and keeps the compressed spring from releasing and
17 injuring people. Furthermore, the external configuration of the cargo lift is
18 more attractive.

19 Other objectives, advantages and novel features of the invention will
20 become more apparent from the following detailed description when taken in
21 conjunction with the accompanying drawings.

22 BRIEF DESCRIPTION OF THE DRAWINGS

23 Fig. 1 is an enlarged exploded perspective view of a platform storage
24 device for a cargo lift for a vehicle in accordance with the present invention;

1 Fig. 2 is a side plan view of the cargo lift for a vehicle in accordance
2 with the present invention;

3 Fig. 3 is a side plan view of the cargo lift for a vehicle in Fig. 1 when
4 the small roller abuts the actuating arm;

5 Fig. 4 is a side plan view of the cargo lift for a vehicle in Fig. 1 when
6 the large roller abuts the actuating arm;

7 Fig. 5 is an operational plan view of the cargo lift for a vehicle in Fig. 1
8 when the platform is folding;

9 Fig. 6 is a side plan view of the cargo lift for a vehicle in Fig. 1 when
10 the platform is folded; and

11 Fig. 7 is a side plan view of a conventional cargo lift for a vehicle in
12 accordance with the prior art;

13 Fig. 8 is a partial exploded view of the conventional cargo lift for a
14 vehicle in Fig. 7.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

16 With reference to Figs. 1 and 2, a cargo lift for a vehicle in accordance
17 with the present invention has a motor (not shown) with a first piston (not
18 shown), an upper stanchion (not numbered), a lower stanchion (not numbered),
19 a mounting bracket (not numbered), a wing (not numbered), two platform
20 brackets (not numbered), a roller bracket (not numbered), a platform (not
21 numbered), and a platform storage device (not numbered).

22 The way to assemble the motor with the first piston, the upper
23 stanchion, the lower stanchion, the wing, the platform brackets, the roller
24 bracket, the platform and the mounting bracket is the same as the previously

1 described conventional cargo lift (40) and will not be described again except to
2 note specific changes to the configuration of the cargo lift in accordance with
3 the present invention.

4 The wing has an outside surface (not numbered), a rear edge (not
5 numbered), a front edge (not numbered) and a mounting stub (not numbered).
6 The mounting stub is mounted on and protrudes from the outside surface near
7 the front edge of the wing.

8 The platform storage device is mounted on the outside of the wing and
9 has an actuating arm (14) and a spring-loaded holder (10). The spring-loaded
10 holder (10) has a cylinder (11), a compressed spring (12), a second piston (13)
11 and a piston nut (not numbered). The cylinder (11) is hollow and has an open
12 end (not numbered) and a partially closed end (not numbered). The second
13 piston (13) has a proximal end (not numbered), a distal end (not numbered), a
14 head (not numbered) and a shaft (not numbered) and is slidably mounted inside
15 the cylinder (11). The head protrudes from the open end of the cylinder (11),
16 and the shaft protrudes from the partially closed end of the cylinder (11). The
17 compressed spring (12) is mounted around the shaft between the head and the
18 partially closed end of the cylinder (11), and the piston nut is screwed onto the
19 shaft outside the cylinder (11) to hold the second piston (13) in the cylinder
20 (11). The cylinder (11) is transversely mounted respectively on the outside
21 surface of the wing attached to the upper stanchion.

22 The actuating arm (14) has a proximal end (not numbered), a distal end
23 (not numbered), a front edge (not numbered), a rear edge (not numbered) and
24 an enlarged foot (not numbered). The proximal end of the actuating arm (14) is

1 pivotally attached to the mounting stub on the wing. The enlarged foot is
2 formed on the distal end of the actuating arm (14).

3 The platform storage device further comprises a retaining spring (15)
4 and the actuating arm (14) further comprises a spring tab (not numbered)
5 formed on the rear edge of the actuating arm (14). An L-shaped rod (16) is
6 mounted on and protrudes from the outside surface near the rear edge of the
7 wing. The return spring (15) is mounted between the spring tab on the rear
8 edge of the actuating arm (14) and the L-shaped rod (16). The return spring (15)
9 securely holds the actuating arm (14) against the head of the second piston (13)
10 in the spring-loaded holder (10).

11 With reference to Figs. 2 to 4, the motor retracts the lower stanchion
12 into the upper stanchion, and the large roller abuts and rolls on the inclined
13 corner and longitudinal arm of the mounting bracket until the small roller abuts
14 the enlarged feet on the actuating arm (14).

15 When cargo with added weight is on the platform, the weight of the
16 cargo and the platform overcome the compressed spring (12) and cause the
17 actuating arm (14) to pivot and press the second piston (13) into the cylinder
18 (11). The small roller rolls on the front edge of the actuating arm (14) until the
19 large roller abuts the enlarged feet on the actuating arm (14) and stops the
20 lower stanchion from being retracted any further into the upper stanchion.

21 With reference to Figs. 5 and 6, the weight of the platform by itself
22 cannot overcome compressed spring (12) so the enlarged foot on the actuating
23 arm (14) presses the small roller down as the lower stanchion is retracted into
24 the upper stanchion and raises the platform to a stowed position.

1 The cargo lift for a vehicle in accordance with present invention has the
2 following advantages:

3 1. The compressed spring (12) is mounted inside the cylinder (11).
4 When the cargo lift is assembled, the compressed spring (12) cannot be
5 released, thereby preventing anyone from being injured by the compressed
6 spring (12).

7 2. Because the compressed spring (12) is mounted inside the cylinder
8 (11), the cargo lift has a much more attractive external appearance.

9 Even though numerous characteristics and advantages of the present
10 invention have been set forth in the foregoing description, together with details
11 of the structure and function of the invention, that the disclosure is illustrative
12 only, and changes may be made in detail, especially in matters of shape, size,
13 and arrangement of parts within the principles of the invention to the full extent
14 indicated by the broad general meaning of the terms in which the appended
15 claims are expressed is to be understood.